

## AMENDMENTS TO CLAIMS

1. (Currently Amended) A system for handling laser-communication multiplexing in chaotic secure communications, comprising

a ~~system of~~ transmitter containing a self-pulsating laser diode, wherein the self-pulsating laser diode is driven by an externally applied ac current containing ~~the~~ messages to be multiplexed;

a ~~system of~~ receiver containing a self-pulsating laser diode, wherein the self-pulsating laser diode of the receiver is driven by signals output by the transmitter, and wherein output signals from the self-pulsating laser diode of the receiver are compared with the signals output by the transmitter to obtain a difference signal including synchronized chaotic time sequences, ~~is driven by the signals output from the transmitter and the output signals of the self-pulsating laser diode of the receiver hence forming synchronized chaotic systems;~~ and

a low-pass filter, ~~whereto to which~~ the difference signal ~~between the output signals of the transmitter and the receiver is sent, and hence is applied, said low-pass filter transforming~~ chaotic time sequences of lower fractal dimension ~~is transferred to the into~~ chaotic time sequences of higher fractal dimension ~~and the to cause a~~ periodicity of the multiplexed messages to emerge by adjusting an appropriate parameter of the low-pass filter, ~~whereby the thereby~~ decoding of the multiplexed message encoded by the chaotic laser light of the transmitter end ~~can be achieved~~.

2. A method for handling laser-communication multiplexing in chaotic secure communications, which comprises the following procedures,

- a. ~~Applying~~ applying a set of messages to be multiplexed and a corresponding set of ac currents to ~~the a~~ laser diode of ~~the a~~ transmitter end;
- b. ~~Driving~~ driving the laser diode of the transmitter end by the ~~said~~ ac current set and adjusting the amplitude and frequency of the said ac current set to produce chaotic laser signals;

- c. ~~Driving~~ driving ~~the~~ a laser diode of ~~the~~ a receiver end by the chaotic signals generated from the transmitter end to obtain receiver end chaotic signals, and adjusting ~~the receiver end chaotic signals to match the chaotic signals generated from the transmitter end, and comparing the chaotic signals to obtain a difference signal containing chaotic time sequences~~ an appropriate coupling parameter to cause the output of the receiver simplex couples to that of the transmitter, and hence forming asymptotically synchronized chaotic systems;
- d. ~~Taking~~ sending the difference between the input and output of the receiver end and ~~sending the said difference signal~~ to a low-pass filter; and
- e. ~~Adjusting~~ adjusting ~~the~~ a parameter of the ~~said low-pass filter, hence the~~ to cause chaotic time sequences of lower fractal dimension ~~is~~ to be transferred to ~~the~~ chaotic time sequences of higher fractal dimension and the periodicity of the multiplexed messages ~~is emerged~~ to emerge, whereby ~~the~~ thereby decoding of the multiplexed messages encoded by the chaotic laser light of the transmitter end ~~can be achieved~~.

3. (Original) The system for handling laser-communication multiplexing in chaotic secure communications as described in claim 1, wherein the parameter of the said low-pass filter is in the range 0.13-0.97.

4. (Original) The method for handling laser-communication multiplexing in chaotic secure communications as described in claim 1, wherein the parameter of the said low-pass filter is in the range 0.13-0.97.